

What is claimed is:

1. A burst mode optical receiver comprising:
 - a photodiode, which receives an optical signal and converts the optical signal into a current signal;
 - 5 a pre-amplifier, which converts the current signal into a voltage signal, amplifies the voltage signal with a gain according to a control signal, and outputs an amplified signal;
 - 10 a first peak detector, which detects a top peak voltage and a bottom peak voltage of the amplified signal and outputs an average value of the detected top peak voltage and the detected bottom peak voltage as a first reference voltage;
 - 15 a gain controller, which compares the first reference voltage with a comparison voltage and outputs the control signal which controls a gain of the pre-amplifier according to the comparison result;
 - a first limiting amplifier, which receives the amplified signal and the first reference voltage and amplifies a difference between the amplified signal and the first reference voltage; and
 - 20 a buffer, which buffers an limitedly amplified signal from the first limiting amplifier.
2. The burst mode optical receiver of claim 1 further comprising:
 - a second peak detector, which detects a top peak voltage and a bottom peak voltage of the limitedly amplified signal and outputs an average value of the detected top peak voltage and the detected bottom peak voltage as a second reference voltage; and
 - 25 a second limiting amplifier, which receives the limitedly amplified signal and the second reference voltage, amplifies the difference between the limitedly amplified signal and the second reference voltage, and outputs an amplified signal to the buffer.
3. The burst mode optical receiver of claim 1, wherein the pre-amplifier comprises:
 - 30 an impedance control unit, which controls first or second impedances in response to the control signal; and
 - an amplifying unit, which converts the current signal into the voltage signal and amplifies the voltage signal with a gain corresponding to an impedance controlled by

the impedance control unit.